

WHAT IS CLAIMED IS:

1. A purified native, synthetic or recombinant protein
5 having a sequence SEQ ID NO: 4 and its fragments and variants.

2. The protein of Claim 1 wherein the sequence SEQ ID NO: 4 comprises sequences SEQ ID NO: 5 and SEQ ID NO: 6.

10 3. The protein of Claim 2 wherein the sequence is SEQ ID NO: 6 corresponding to a mature enzyme.

4. The protein of Claim 3 wherein the sequence is SEQ ID NO: 5 corresponding to a pre pro fragment.

15 5. The protein of Claim 4 which is an inhibitor of the protein of Claim 3.

20 6. A DNA encoding a protein having a sequence SEQ ID NO: 1 and its fragments and variants.

7. The DNA of Claim 6 comprising sequences SEQ ID NO: 2 and SEQ ID NO: 3.

25 8. An mRNA encoding a protein having a sequence SEQ ID NO: 1.

9. An antibody specifically binding to an antigen having sequence SEQ ID NO: 4.

30 10. The antibody of Claim 9 binding to a fragment of SEQ ID NO: 4 said fragment having a sequence SEQ ID NO: 5.

11. The antibody of Claim 9 binding to a fragment of SEQ ID NO: 4 said fragment having a sequence SEQ ID NO: 6.

12. The antibody of Claim 9 which are monoclonal or
5 polyclonal.

13. A natural, synthetic or recombinant vaccine comprising a protein having a sequence SEQ ID NO: 4 useful for active immunization of a host against *Cryptosporidium* infection and an appropriate pharmaceutically acceptable adjuvant, said vaccine adapted to immunize a subject against cryptosporidiosis so that after immunization infection with *Cryptosporidium* elicits from the subject an amount of anti-*Cryptosporidium* antibodies sufficient to retard, inhibit
15 or counter the infection.

14. The vaccine of Claim 12 wherein the protein has a sequence SEQ ID NO: 6.

20 15. A natural, synthetic or recombinant DNA or RNA vaccine having a nucleotide sequence SEQ ID NO: 1, wherein said vaccine is capable to endogenous elicit development of anti-*Cryptosporidium* antibodies.

25 16. A method of treatment of *Cryptosporidium* infections of comprising administering to a subject in need of such treatment an inhibitory amount of anti-*Cryptosporidium* antibodies binding to a protein having a sequence SEQ ID NO:
4.

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17. A method of prophylaxis of *Cryptosporidium* infection comprising administering to a subject in need of such prophylaxis an amount of a protein having a sequence SEQ ID

NO: 4 capable of binding to the anti-*Cryptosporidium* antibody, said amount sufficient to elicit production of anti-*Cryptosporidium* antibodies.

5 18. A method of diagnosing *Cryptosporidium* infection, comprising steps:

10 (a) contacting a sample of a body specimen, fluid or tissue obtained from a subject with an anti-*Cryptosporidium* antibody having specificity for an antigen having a sequence SEQ ID NO: 4; and

 (b) detecting a formation of complex of the antibody/antigen present in the body sample.